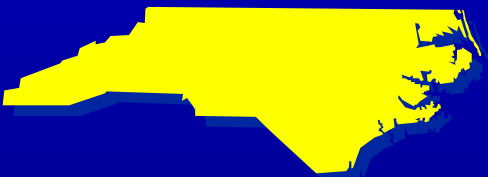


NC Supplement to the 2003 MUTCD (Signs)

***Traffic Engineering & Safety Systems
Branch Conference***

September 9, 2004



North Carolina

Department of Transportation



Overview

- Part 2 - Signs
- Part 7 - School Areas (signs)
- Part 8 - Highway-Rail Grade Crossings (signs)

Chapter 2A - General Design of Signs

NC has many special and unique sign designs.
To request a special sign, please complete the
form located on the following webpage:

[http://www.doh.dot.state.nc.us/precon
struct/traff/congestion/sign/specialsign](http://www.doh.dot.state.nc.us/preconstruct/traff/congestion/sign/specialsign)

Chapter 2A - General Retroreflectivity and Illumination

- **Effective January 1, 2005, all regulatory, warning, and guide signs shall have a minimum Type III High Intensity sheeting.**
- **Contact the Signing Section for a list of approved suppliers.**



Chapter 2A - General Lateral Offset

- **Ground-mounted signs**
 - 18' min. from lane for B/A supports (12' min. on ramps)
 - 6' min. from barrier for simple supports
 - 6' min. from lane for yielding supports



Chapter 2A - General Lateral Offset

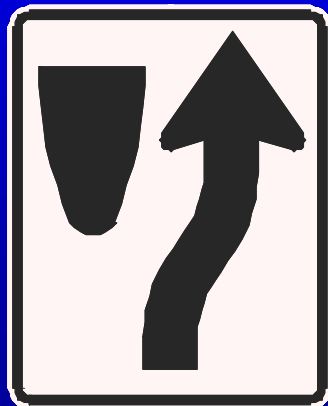
- **Overhead-mounted signs**
 - **40' min. on freeways**
 - **30' min. on expressways**
 - **30' min. on conventional roads
(45 mph and higher)**
 - **18' min. on conventional roads
(less than 45 mph)**



Chapter 2A - General Posts and Mountings

- **DMS systems shall not be installed on cantilever structures; and**
- **More than two u-channel post per sign assembly is not allowed.**

Chapter 2B - Regulatory





Chapter 2B - Regulatory Speed Limit Sign (R2-1)

- **36"x48" sign shall be posted near state line for all conventional roads and expressways entering the state; and**
- **metric signs shall not be used.**

Chapter 2B - Regulatory

Speed Limit Sign (R2-1)

SPEED LIMIT (MPH)	RECOMMENDED SIZE OF R2-1 SIGN
40 or less	24" x 30" (600 mm x 750 mm)
45	24" x 30" (600 mm x 750 mm) or 30" x 36" (750 mm x 900 mm)
50	30" x 36" (750 mm x 900 mm) or 36" x 48" (900 mm x 1200 mm)
55	30" x 36" (750 mm x 900 mm) or 36" x 48" (900 mm x 1200 mm) or 48" x 60" (1200 mm x 1500 mm)
60 and greater	48" x 60" (1200 mm x 1500 mm)



Chapter 2B - Regulatory

Location of Speed Limit Signs

- On 55 mph or higher facilities, R2-1 signs should be posted at 5 mile intervals (max.); and
- additional signs should be installed at major intersections and interchanges.



Chapter 2B - Regulatory

Location of Speed Limit Signs

Posted Speed Limit

Max Distance Between Signs

40 mph to 50 mph

2110 feet (0.4 mi)

30 mph and 35 mph

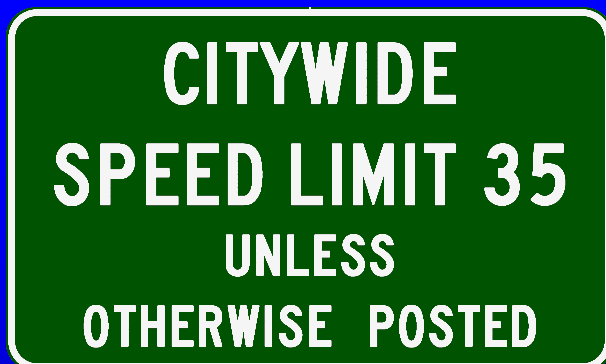
1580 feet (0.3 mi)

20 mph and 25 mph

1060 feet (0.2 mi)

Chapter 2B - Regulatory

City Limit Supplemental Speed Limit Sign



R2-27

42"x14" - minor streets

60"x36" - major streets

A speed limit sign R2-1 shall be installed at or near the R2-27 sign.

Chapter 2B - Regulatory State Law Signing



R20-17
144"x18"
108"x12"

R20-14
144"x48"
108"x36"

R20-17
48"x12"

R20-15
48"x48"



G.S. 20-157

Placed on all four lane divided facilities at the state line and at specific locations.

Placed on all two lane, two way facilities at the state line and at specific locations.

Chapter 2B - Regulatory

Fender Bender Move Vehicle From Road



R20-16

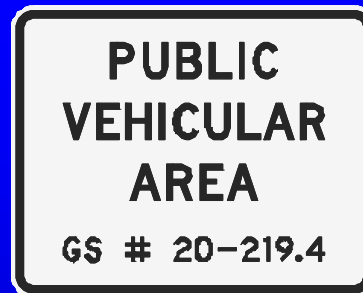
78"x36"

Placed at specific locations on State Highway systems where traffic volumes have a potential for major traffic delays due to crashes. (G.S. 20-166)

Chapter 2B - Regulatory

Public Vehicular Area Sign

R20-1



May be placed to designate an area of private property used for vehicular traffic to allow enforcement of vehicular violations.

Chapter 2B - Regulatory Standard, Guidance, or Option Changes

**STATE LAW-FASTEN SEAT BELTS (R5-17):
Option (Standard)**

**MAX FINE \$1000 TO LITTER (R20-6): Option
(Guidance)**

State Owned Property No Trespassing (R20-11)

**State Owned Material No Trespassing (R20-11a):
Option (Guidance)**



Chapter 2B - Regulatory Signs not in the Supplement

Minimum Speed Sign (R2-40)

4 - 6 PM MON. - FRI. (R2-57)

LANE USE CONTROL Signs (R3-5, R3-5a, R3-18, and R3-19)

TURNING TRAFFIC Signs (R3-20, R3-21, and R3-22)

SLOWER TRAFFIC KEEP RIGHT (R4-3)

SLOWER TRAFFIC LANE (500)FT (R4-60)

TRUCKS USE NEXT CROSSOVER (500)FT (R4-61)

MERGE RIGHT (LEFT) INTO SINGLE LANE (R4-70)



Chapter 2B - Regulatory Signs not in the Supplement

DO NOT PASS IN MEDIAN AREA (R4-82)

NO THRU TRUCKS (TRAFFIC) (R5-2b, R5-4a)

THRU TRAFFIC (R5-4b)

MOTOR VEHICLES ONLY PROHIBITION Sign (R5-12)

YIELD TO PEDESTRIANS (R9-10)

DO NOT BLOCK CROSSING (R10-7a)

BRIDGE CLOSED (R11-2a)

WEIGHT LIMIT Signs (R12 Series)

Chapter 2B - Regulatory Signs not in the Supplement

ALL TRUCKS NEXT RIGHT (R13-1a)

NO FISHING FROM HIGHWAY RIGHT OF WAY (ROW) (R13-79)

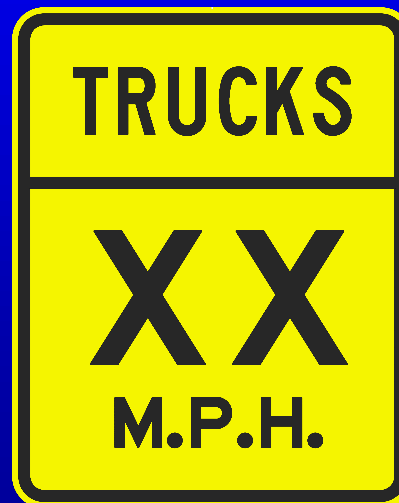
NO HUNTING ON HIGHWAY ROW (R13-90)

NO DEER HUNTING ON HIGHWAY ROW (R13-91)

UNLAWFUL TO CUT PALNTS OR TREES ON HIGHWAY ROW (R15-10)

UNLAWFUL TO DAMAGE, REMOVE, CLIMB, CROSS OR BREACH ANY
FENCE ERECTED WITHIN THE ROW (R15-11)





Chapter 2C - Warning



Chapter 2C - Warning STOP Sign Sight Distance

STOP Sign Sight Distance				
Posted Speed Limit (MPH)	Stopping Sight Distance (wet pavement)	Increase Correction for 9% Downgrade	Stopping Sight Distance with 9% Downgrade Correction (rounded off)	Minimum STOP Sign Sight Distance (rounded off)
20	115 feet (35 m)	15 feet (4.6 m)	130 feet (40 m)	150 feet (45 m)
25	155 feet (50 m)	20 feet (6.1 m)	175 feet (55 m)	200 feet (60 m)
30	200 feet (60 m)	30 feet (9 m)	230 feet (70 m)	250 feet (75 m)
35	250 feet (75 m)	40 feet (12 m)	290 feet (90 m)	300 feet (90 m)
40	305 feet (90 m)	50 feet (15 m)	355 feet (110 m)	400 feet (120 m)
45	360 feet (110 m)	70 feet (21 m)	430 feet (130 m)	450 feet (140 m)
50	425 feet (130 m)	85 feet (26 m)	510 feet (155 m)	550 feet (170 m)
55	495 feet (150 m)	100 feet (30 m)	595 feet (180 m)	600 feet (180 m)
60	570 feet (175 m)	120 feet (35 m)	690 feet (210 m)	700 feet (215 m)
65	645 feet (200 m)	140 feet (43 m)	785 feet (240 m)	800 feet (245 m)

Guidelines for Advance Placement of Warning Signs

Posted or 85th Percentile Speed MPH (Km/H)	Condition A: High Judgement required ² feet (m)			Advance Placement Distance ¹																				
				Condition B: Stop Condition ³			Condition C: Deceleration condition to listed advisory speed - MPH (Km/H) (or desired speed at condition ⁴)																	
							0			10 – 15 (15 – 25)			20 - 25 (30 - 40)			30 – 35 (50 - 55)			40 – 45 (60 - 70)			50 – 55 (80 - 90)		
20 (30)	225 (70)	250 (75)	350 (105)	N/A ⁵		-	N/A ⁵	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25 (40)	325 (100)	350 (105)	450 (140)	N/A ⁵		-	N/A ⁵	-	-	N/A ⁵	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30 (50)	450 (140)	475 (145)	575 (175)	N/A ⁵		-	N/A ⁵	-	-	N/A ⁵	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35 (60)	550 (170)	575 (175)	675 (205)	N/A ⁵		-	N/A ⁵	-	-	N/A ⁵	-	-	N/A ⁵	-	-	-	-	-	-	-	-	-	-	-
40 (65)	650 (200)	675 (205)	775 (235)	125 (40)	300 (90)	450 (140)	N/A ⁵	-	-	N/A ⁵	-	-	N/A ⁵	-	-	-	-	-	-	-	-	-	-	-
45 (75)	750 (230)	775 (235)	875 (270)	175 (50)	350 (105)	500 (150)	125 (40)	300 (90)	450 (140)	N/A ⁵	-	-	N/A ⁵	-	-	N/A ⁵	-	-	-	-	-	-	-	-
50 (80)	850 (260)	875 (270)	975 (300)	250 (75)	400 (120)	550 (170)	200 (60)	350 (105)	500 (150)	150 (45)	300 (90)	450 (140)	100 (30)	300 (90)	450 (140)	N/A ⁵	-	-	-	-	-	-	-	-
55 (90)	950 (290)	975 (300)	1075 (330)	325 (100)	450 (140)	600 (180)	275 (85)	400 (120)	550 (170)	225 (70)	350 (105)	500 (150)	175 (50)	350 (105)	500 (150)	100 (30)	300 (90)	450 (140)	N/A ⁵	-	-	-	-	-
60 (100)	1100 (335)	1125 (345)	1225 (375)	400 (120)	500 (150)	650 (200)	350 (105)	450 (140)	600 (180)	300 (90)	400 (120)	550 (170)	250 (75)	400 (120)	550 (170)	175 (50)	350 (105)	500 (150)	N/A ⁵	-	-	-	-	-
65 (105)	1200 (365)	1225 (375)	1325 (405)	475 (145)	550 (170)	700 (210)	425 (130)	550 (170)	700 (210)	400 (120)	500 (150)	650 (200)	350 (105)	450 (140)	600 (180)	275 (85)	400 (120)	550 (170)	175 (50)	300 (90)	450 (140)	N/A ⁵	-	-
70 (115)	1250 (380)	1275 (390)	1375 (420)	550 (170)	650 (200)	800 (245)	525 (160)	650 (200)	800 (245)	500 (150)	600 (180)	750 (230)	425 (130)	550 (170)	700 (210)	350 (105)	450 (140)	600 (180)	250 (75)	350 (105)	500 (150)	150 (45)	300 (90)	450 (140)
	MUTCD Distance	Suggested Location,	Suggested Maximum	MUTCD Distance	Suggested Location,	Suggested Maximum	MUTCD Distance	Suggested Location	Suggested Maximum	MUTCD Distance	Suggested Location	Suggested Maximum	MUTCD Distance	Suggested Location	Suggested Maximum	MUTCD Distance	Suggested Location,	Suggested Maximum	MUTCD Distance	Suggested Location	Suggested Maximum	MUTCD Distance	Suggested Location	Suggested Maximum

Chapter 2C - Warning Low Clearance (W12-2) Signs



W12-2

W16-2a

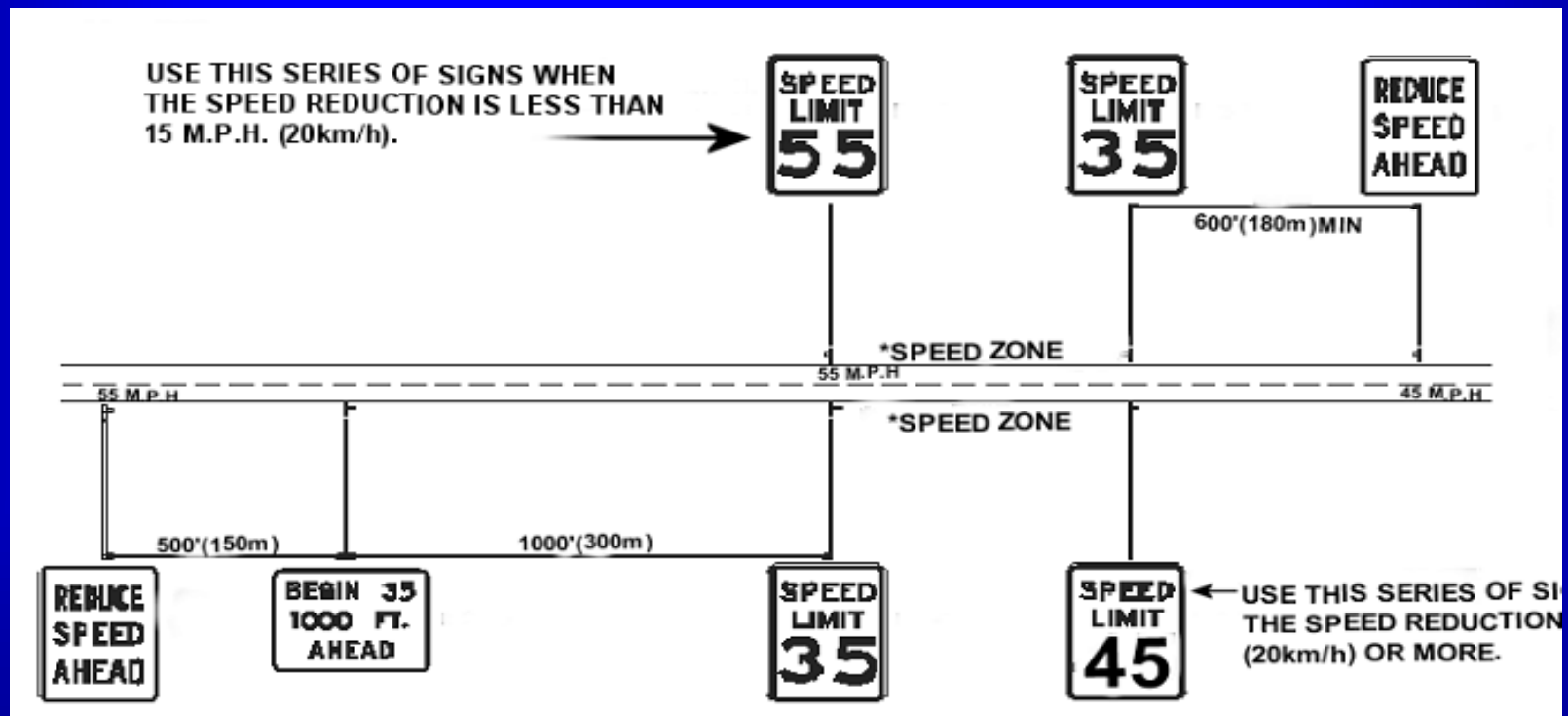
When a Low Clearance sign is used, a distance ahead plaque shall be installed below the sign.

Chapter 2C - Warning Speed Reduction (W3-5, W3-5a) Signs

Due to G.S. 136-33.2, the Reduce Speed Ahead sign (R2-5) shall be posted in advance of speed zones.

Chapter 2C - Warning Speed Reduction (W3-5, W3-5a) Signs

Current Speed Zone Signing

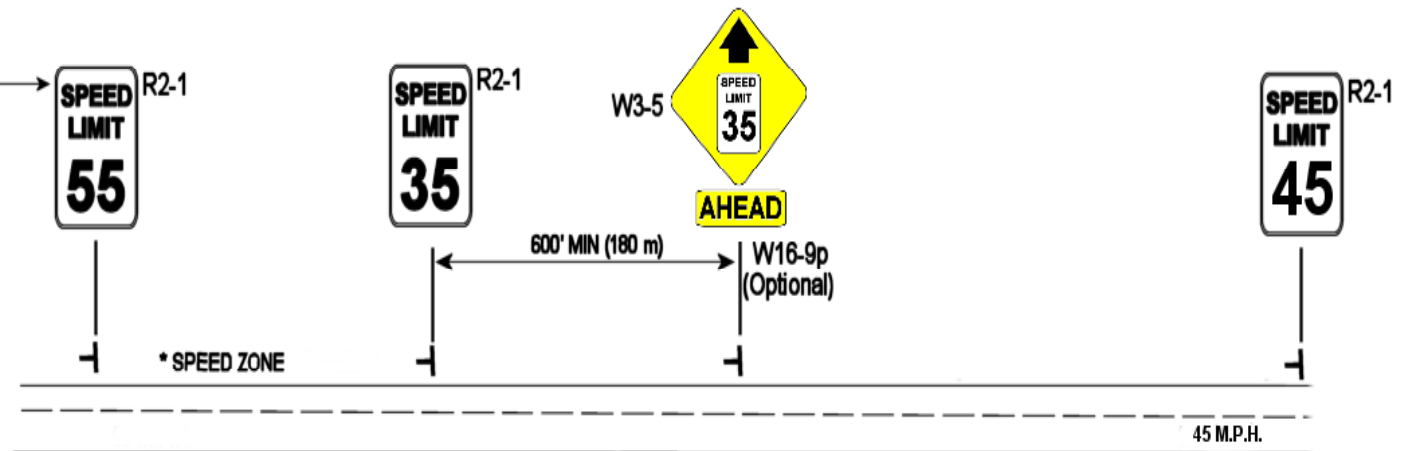


Chapter 2C - Warning Speed Reduction (W3-5, W3-5a) Signs

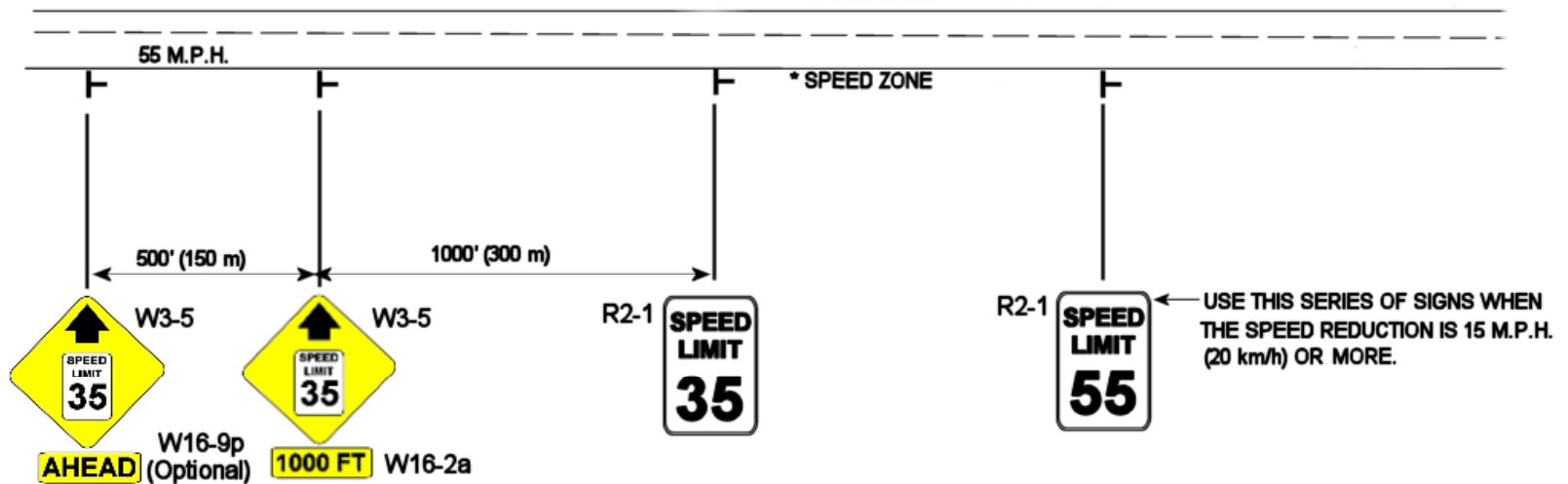
When the reduction in the speed limit is less than 15 mph, a W3-5 or W3-5a sign shall be erected at least 600' in advance of the speed zone.

Chapter 2C - Warning Speed Reduction (W3-5, W3-5a) Signs

USE THIS SERIES OF SIGNS WHEN
THE SPEED REDUCTION IS 15 M.P.H.
(20 km/h) OR LESS.

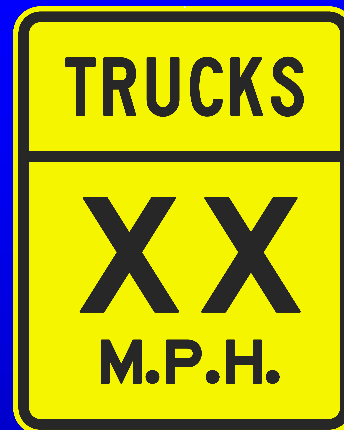


Chapter 2C - Warning Speed Reduction (W3-5, W3-5a) Signs



* SEE SECTION 2B.18 OF THIS SUPPLEMENT
FOR SPACING OF SIGNS IN SPEED ZONES.

Chapter 2C - Warning Advisory Truck Speed Sign (W13-4)



W13-4

Sign should be posted at the gore of exit lane leading to permanent official truck weigh stations. The speed limit used should be determined by existing conditions.

Chapter 2C - Warning Vehicular Traffic Signs and Nonvehicular Signs

Signs are not intended to be used to warn of vehicular or nonvehicular traffic using the road or shoulders such as pedestrians, horses, cattle, bicycles, etc. and normally would not be installed in subdivisions or on unpaved roads due to slow speeds and local traffic.

Chapter 2C - Warning Advisory Speed Plaque (W13-1)



W13-1

When determining an advisory speed with a ball-bank indicator, the 10° ball-bank indicator reading should be used.

Chapter 2C - Warning Standard, Guidance, or Option Changes

ROAD SUBJECT TO FLOODING (W14-6):

Guidance (Standard)

TRUCKS ENTERING HIGHWAY (W14-12):

Option (Standard)

LOW FLYING PLANES (W14-13):

Option (Guidance)



Chapter 2C - Warning Signs not in the Supplement

Crossroad Symbol (W2-6)

STOP 1000 FT (W3-1b)

FIRE SIGNAL (W3-9), FIRE SIGNAL AHEAD
(W3-10)

ONE LANE BRIDGE (1000) FT (W5-3a)

GROOVED PAVEMENT AHEAD (W5-5)



Chapter 2C - Warning Signs not in the Supplement

TRAFFIC ISLAND AHEAD (W6-10)

ACCIDENT AHEAD (W6-20)

**ICE CHAINS NEEDED (W17-10), ICE ON
BRIDGE (W17-11), and ICE AT INTERVALS
(W17-13)**

Delineators (W23-10, W23-12)

Advance Signing for Lane Ending (W19-10)

Chapter 2D - Guide Signs

Conventional Roads



Chapter 2D - Guide Signs

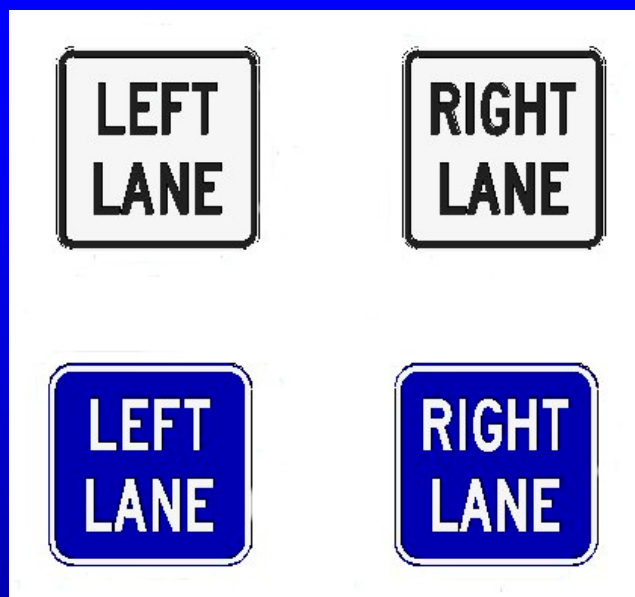
Size of Lettering

Type of Facility	Posted Speed Limit		
	40 mph (60 km/h) and below	45 mph (70 km/h) or 50 mph (80 km/h)	55 mph (90 km/h) and above
2 Lane/2Way or 3-Lane Section	6 in (150 mm)	6 in (150 mm)	6 in (150 mm) [Minimum] 8 in (200 mm) [Desired]
2 or More Lanes in Each Direction	6 in (150 mm) [Minimum] 8 in (200 mm) [Desired]	8 in (200 mm)	8 in (200 mm)

Chapter 2D - Guide Signs

LEFT (RIGHT) LANE Auxiliary Sign

M4-16L



M4-16R

Use signs at interchanges when there are two or more through lanes in that direction.



Chapter 2D - Guide Signs

Street Name Signs

Street Name sign shall be the sole responsibility of the municipality. These signs shall be erected in such a manner that they will not interfere with other signs, signals, or operation of signals.

Chapter 2D - Guide Signs

Signing of Named Highways (Memorial / Dedication Signs)

Memorial or dedication signs shall be ground mounted only and not installed on facilities leading to the highway actually being dedicated. Dedication signs shall be limited to one installation per direction of travel within the dedicated facility.

Chapter 2E - Guide Signs

Freeways and Expressways





Chapter 2E - Guide Signs

Retroreflectorization and Illumination

- A. Exit direction signs
- B. Minimum of one advance guide sign for exit;
- C. Advance and exit direction signs for left exits;
- D. Diagrammatic signs;
- E. Lane designation signs at route splits
- F. Signs at ramp splits;

Chapter 2E - Guide Signs Retroreflectorization and Illumination

- G. Signs on roadways with four or more through lanes;
- H. Regulatory and warning signs;
- I. Signs with obstructed or limited sight distance (less than 1,200 feet); and

Chapter 2E - Guide Signs

Retroreflectorization and Illumination

- J. Signs on roadways in areas with two or more through lanes in each direction with traffic volumes at, near, or exceeding capacity, truck traffic of 10% or more, and a speed limit of 45 mph or more.

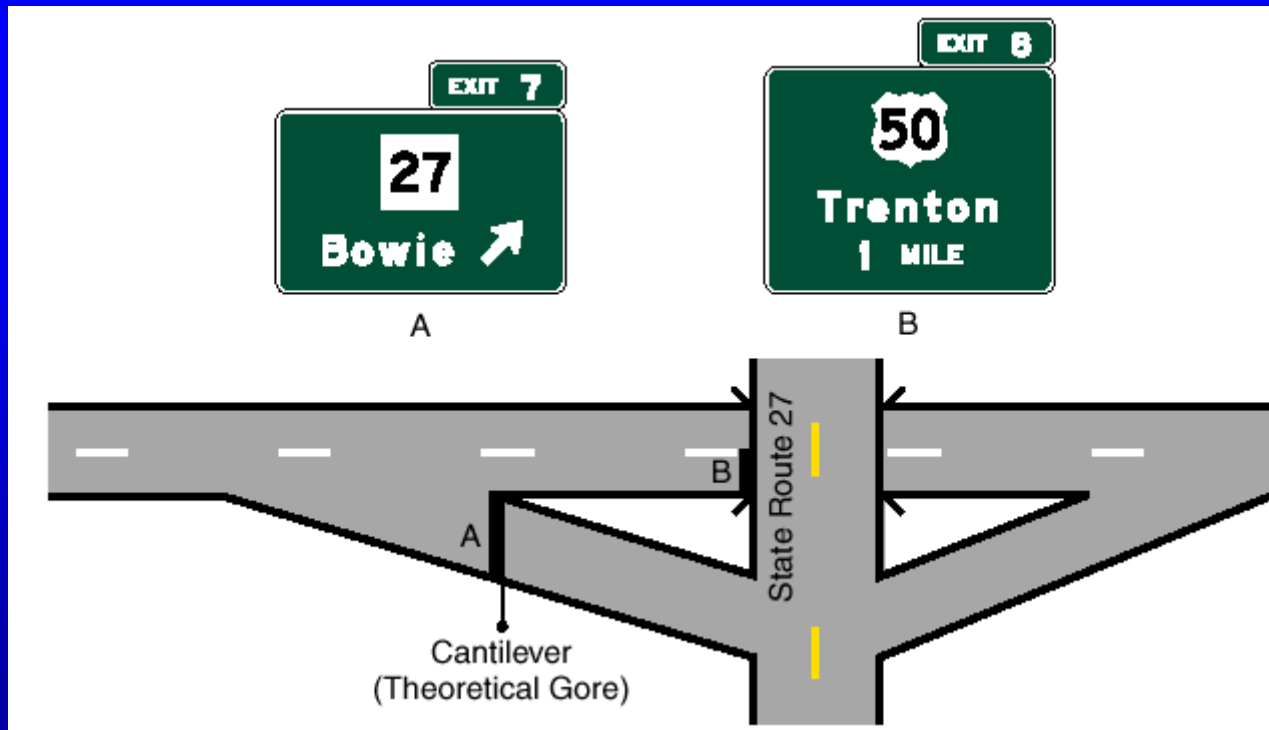
Chapter 2E - Guide Signs

Number of Signs at an Overhead Installation

It is advantageous to include an advance guide sign for the next interchange beside the exit direction sign on the overhead sign assembly, especially if the next interchange is within 3 miles.

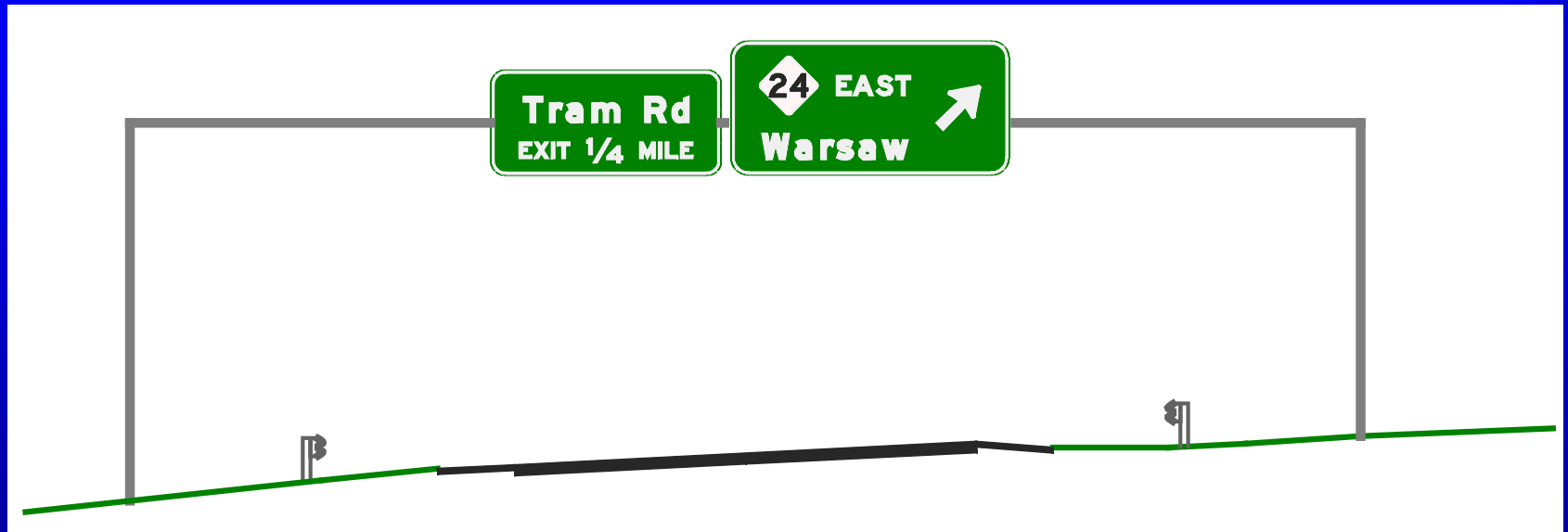
Chapter 2E - Guide Signs

Number of Signs at an Overhead Installation



Chapter 2E - Guide Signs

Number of Signs at an Overhead Installation



Chapter 2E - Guide Signs

Number of Signs at an Overhead Installation

The advance guide sign should be installed as close as practical to the 1 mile and 2 mile locations measured from the theoretical gore for the exit. Signs should not be installed on structures unless the structure was originally designed to include sign installations.



Chapter 2E - Guide Signs

Diagrammatic Signs

No more than two destinations should be shown per arrowhead, and no more than four destinations should be shown per sign.

Chapter 2E - Guide Signs

Signing for Interchange Lane Drops

A lane that is dropping should be a minimum of 1,800 feet of continuous full lane to be considered a lane drop and signed as EXIT ONLY.

Chapter 2E - Guide Signs

Support Classification, Design, and Installation

The following are support types commonly used:

- 2 lb u-channel
- 3 lb u-channel
- simple steel beam
- breakaway steel beam
- barrier sign support assembly (small and large)
- wood (4"x4", 4"x6", 6"x6", 6"x8", and 8"x8")

Chapter 2E - Guide Signs

Interchange Exit Numbering

The reference location sign exit numbering method shall be used for numbering of interchanges. Exit numbers shall be determined or approved by the Traffic Engineering and Safety Systems Branch - Signing Section.



Chapter 2E - Guide Signs

Distance Signs

The distance stated on the sign shall be to the center of the city. The preference for destinations on these signs shall be as follows: control city, county seat, other city of significant destination, and intersecting route. Names of communities shall not be listed on distance signs.

Chapter 2E - Guide Signs

Distance Signs

A distance sign for a metropolitan city should not be installed closer than 30 miles from the center of the city. A distance sign for other cities, destinations, or intersecting routes should not be installed closer than 10 miles from the center of the city, destination, or intersecting route.

Chapter 2E - Guide Signs

Reference Location Signs



In urban areas or areas determined to have a high volume of disabled vehicles, reference location signs may be installed at 0.2 or 0.5 mile increments. These reference location signs may include the route and the cardinal direction.

Chapter 2E - Guide Signs

Interstate Route Signs



Future interstate facilities may be signed as such, using the interstate shield. The shield shall not contain the message INTERSTATE within. The word FUTURE shall be placed above the shield. These installations shall be on green background guide sign.



Chapter 2E - Guide Signs

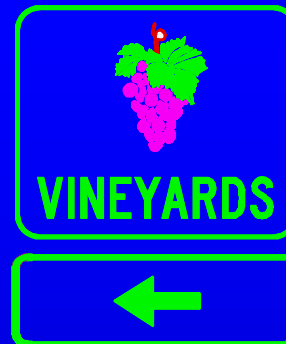
Industrial Park Signs



Industrial park signs may be erected to provide directional information to industrial parks. The Division Engineer or his designated representative shall have final authority to determine the actual number and location of the signs.

Chapter 2E - Guide Signs

Agricultural Tourism Signs



The NCDOT in partnership with the North Carolina Department of Agriculture and Consumer Services (NCDA & CS) may allow the installation of Agriculture Tourism signs along State Highways to promote tourism for businesses that provide tours and on site sales or samples of North Carolina agricultural products.

Chapter 2F - Specific Service Signs

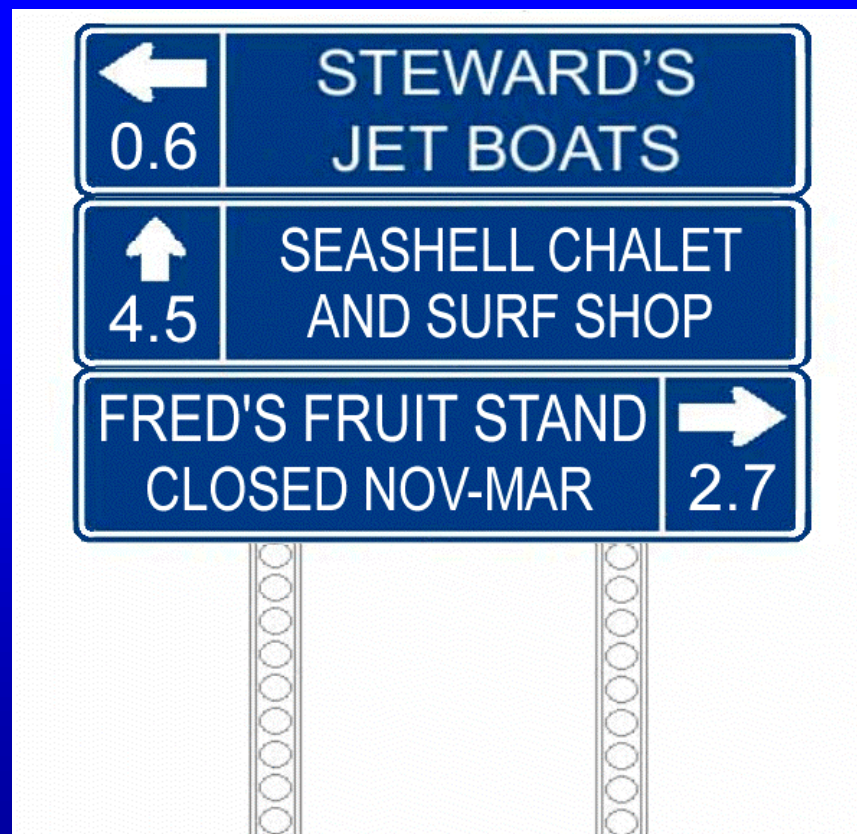


Chapter 2F - Specific Service Signs

Qualification and installation of Specific Service Signs (Logo) shall comply with the rules and procedures available on the following NCDOT Signing webpage:

<http://ncdot.org/~logo>

Chapter 2G - Tourist-Oriented Directional Signs





Chapter 2F - Tourist-Oriented Directional Signs

Qualification and installation of Tourist-Oriented Directional Signs (TODS) shall comply with the rules and procedures available on the following NCDOT Signing webpage:

<http://ncdot.org/~tods>

NCDOT

North Carolina

Chapter 2H - Recreational and Cultural Interest Area Signs



Chapter 2H - Recreational and Cultural Interest Area Signs



The State Historic Site Emblem shall be used on signs for the official historic site destinations as designated by the NC Department of Cultural Resources and that meet NCDOT minimum requirements for guide sign installation.

Chapter 2H - Recreational and Cultural Interest Area Signs

A list of state historic sites is located on
the following webpage:

<http://www.ah.dcr.state.nc.us/>

NCDOT

North Carolina

Chapter 2I - Emergency Management Signing Evacuation Route Sign



Chapter 2I - Emergency Management Signing Evacuation Route Sign



EM-1

When used on conventional roads with posted speeds of 45 mph or more, the size of the EM-1 sign shall be at least 24"x24". When used on freeways and expressways, the size of the EM-1 sign shall be at least 36"x36".

Chapter 7B - School Areas

SCHOOL



Chapter 7B - School Areas

The following signs shall have a
fluorescent-yellow background.



AHEAD

500 FT

SCHOOL



NCDOT

North Carolina

Chapter 8B - Highway-Rail Grade Crossing



Chapter 8B - Highway-Rail Grade Crossing Warning Sign

W10-1



Sign W10-1 shall have a fluorescent yellow retroreflective sheeting background color.

Chapter 8B - Highway-Rail Grade Crossing Emergency Notification Sign

I-13



Sign I-13 may be installed to allow motorist to report malfunctions or emergencies.



QUESTIONS?

Ron King, P.E.

State Signing Engineer

Phone: (919) 250-4143

email: ronking@dot.state.nc.us

